6th IWG Meeting of GTR13 Phase2

Planning Research for Development of Safety Assessment Technology & Test Devices of HFCV Bus

Siwoo Kim / KATRI

Ministry of Land, Infrastructure and Transport

TS Korea Automobile Testing and Research Institute

01 Hydrogen Society Roadmap

Ministry of Land, Infrastructure and Transport

Korea Automobile Testing and Research Institute

Vision

Leading country in the world's hydrogen economy

- #1 in World Market Share of Hydrogen Vehicles/Fuel Cell Vehicles
- To Green Hydrogen Producing Country from Fossil Fuel Importing Country

Goal			2018	2022	2040
	Hydrogen Vehicle (domestic) (export)		1,800 (900) (900)	81,000 (14,000) (67,000)	6.2 mil (3.3 mil) (2.9 mil)
	Fuel Cell	Power Generation (domestic)	307 MW (total)	1.5 GW (1 GW)	15 GW (8GW)
		Household /Building	7 MW	50 MW	2.1 GW
	Hydrogen Supply		130,000 tons/yr	470,000 tons/yr	5.26 Mtons/yr
	Hydrogen Price		-	6,000 won/kg	3,000 won/kg

	2018	2022	2040
Hydrogen Vehicle	1,800 (900)	81,000 (67,000)	6.2 mil (2.9 mil)
Passenger	1,800(900)	79,000(65,000)	5.9 mil(2.75 mil)
Taxi	-		120,000(80,000)
Bus	2	2,000	60,000(40,000)
Truck	-	-	120,000(30,000)
Charging Station	14	310	1,200 more

02 Planning on the Development of the Safety of HFCV Bus

Ministry of Land, Infrastructure and Transport

Korea Automobile Testing and Research Institute

Research Title	**Planning Research for Development of Safety Assessment Technology & Test Devices of HFCV Bus**
Project Manager	**KATRI Kim, Siwoo, Ph.D**
Joint research institute	**Korea Gas Safety Corporation, Wiseley and Co.**
Planning Goals	**Demands and Trends in Developing Safety Assessment Technology & Test Devices of HFCV Bus** **R&D Projects Plan: Project Strategy, Project Candidates, Feasibility Study and Commercialization** **- Plan of Safety Assessment and Periodic Inspection of HFCV Bus** **- Plan of Specification and Manufacturing of Test Devices of HFCV Bus** **- Plan of Amendment to Relevant Regulations**
Period	**2018. 12. 1. ~ 2019. 11. 30. (1 yr)**

03 Back grounds of Necessity for the Safety on HFCV Bus

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Various Bus Crashes

No Safety Regulations For HFCV Bus

No Periodic Inspection

No Safety Regulations For Large CHSS

Necessity for Development of Safety Assessment Technology & Test Devices in consideration of HFCV Bus Characteristics

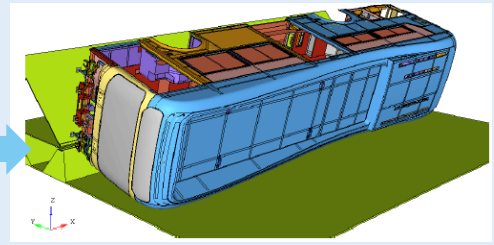
☑ Various Bus Crashes

Rollover(death 1, injured 6)

Rollover(death 4, injured 20)

Side Impact/Rollover(injured 7)

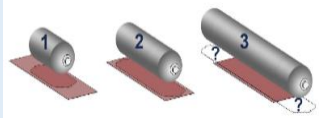
☑ No Safety Regulations For HFCV Bus



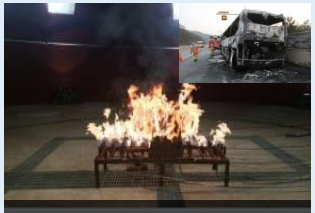
KMVSS 91 : No Tet procedures for Hydrogen Leakage in Rollover and No Verification protocols of Simulation

No Test Devices in Periodic Inspection for Leakage and Safety of CHSS of in-use HFCV Bus

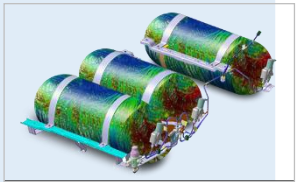
☑ No Safety Regulations For Large CHSS



CHSS Fire Test



Assessment Technology of CHSS Fire Safety



Charging & Discharging Test For Modules

04 Initial Draft Proposal of Research Direction for the Safety on HFCV Bus

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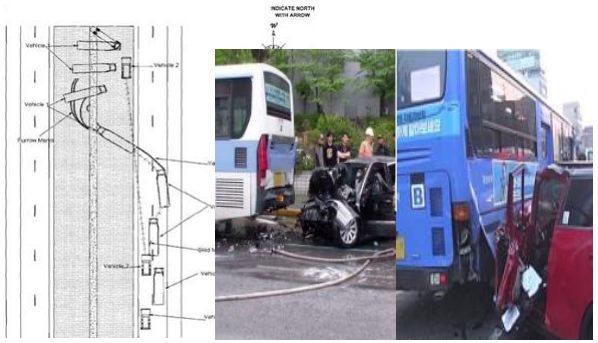
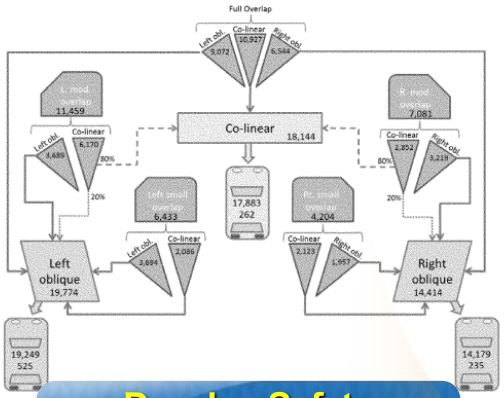


Collect & Analysis of Accident Data of HFCV Buses and other buses



Develop Safety Assessment Scenarios

Periodic Inspection

Crashworthiness

Verification for Rollover simulation

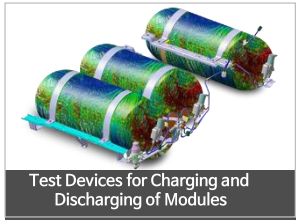
Test Devices for CHSS Fire Safety

Hydrogen Gas Permeation /Emission Inspection

Non-Destructive Periodic Inspection Devices

Test Method for Side Impact

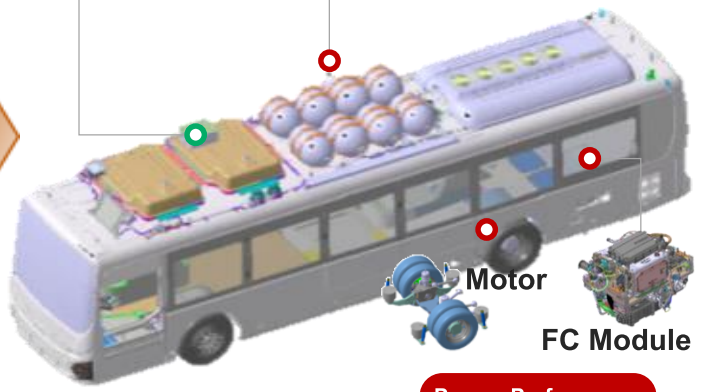
Test Facility for Power Performance



Test Devices for Charging and Discharging of Modules

RESS

Hydrogen CHSS



Power Performance

Development of Safety Assessment Technology & Test Devices of HFCV Bus

Development of Safety Assessment Technology & Test Devices of HFCV Bus Components

Development of Periodic Inspection & Test Devices of In-use HFCV Bus

Domestic Legislation for HFCV Bus and International Harmonization (Ensure Safety of HFCV Bus)

05 Initial Draft Project Plan for the Safety on HFCV Bus

Ministry of Land, Infrastructure and Transport

Korea Automobile Testing and Research Institute

- Project Title : Development of Safety Assessment Technology & Test Devices of HFCV Bus
- Period: 2020 ~ 2023

Goal

Development of Safety Assessment & Inspection Technology and Test Devices for HFCV Bus
Propose the Domestic Safety Regulations of HFCV Bus & International harmonization.

Subjects

Part 1 - Development of Safety Assessment & Inspection Technology and Test Devices, Int'l Harmonization

Part 2 – Development of Inspection Technology and Test Devices for in-use HFCV Bus

Part 3– Development of Safety Assessment Technology and Test Devices for Hydrogen Parts, Equipment

Thank you